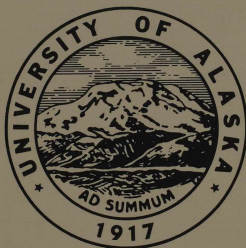


A Summary of Research Projects
with the
Agricultural Experiment Station
FY 1981



Agricultural Experiment Station
University of Alaska
Fairbanks, Alaska 99701

James V. Drew, Director

AGRICULTURAL RESEARCH

**UNIVERSITY OF ALASKA, FAIRBANKS
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING**

A Summary of Research Projects with the Agricultural Experiment Station, FY 1981

Fairbanks Research Center
Palmer Research Center
Homer Research Center

July 1, 1981

Agricultural Experiment Station
University of Alaska
Fairbanks, Alaska 99701

James V. Drew, Director

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INTRODUCTION

The purpose of this report is to outline the research projects of the Alaska Agricultural Experiment Station for the 1981 fiscal year (from July 1, 1980 to June 30, 1981). In addition, the report summarizes these projects in terms of the sources and distribution of funds, expenditures by major functions, state goals, national goals, and national research problem areas.

The financial data given in this report represent the amounts expended for individual projects. In general, the financial data presented are based on the University's accounting system. The dollar amounts should not be taken as an official accounting, but rather as an index of the distribution of funds by research areas. The scientist years (SYs) are estimates of time committed by the professional staff for all projects and include SYs reported in the CRIS system.

INDEX OF STAFF AND DISCIPLINES, FY 1981

Administration:

Project Page(s)

J. V. Drew, Ph.D.	Director	15, 42, 51, 61, 73
S. H. Restad, M.S.	Assistant Director	43, 61, 62, 63, 69
C. W. Hartman	Executive Officer	61
M. S. Murray	Experiment Station, Editor	64
L. J. Klebesadel*, Ph.D.	AR/SEA Research Leader	
R. L. Taylor*, M.S.	AR/SEA Location Leader	

Research Staff:

L. D. Allen, M.S.	Associate Professor, Agricultural Engineering	16, 39, 74
A. L. Brundage, Ph.D.	Professor, Animal Science	35, 37, 38, 73
J. S. Conn*, Ph.D.	Weed Scientist	27
C. H. Dearborn*, Ph.D.	Research Horticulturist	31
D. H. Dinkel, Ph.D.	Professor, Plant Physiology	30, 32, 57
J. D. Fox, Ph.D.	Assistant Professor, Resource Management	15
A. F. Gasbarro, M.S.	Instructor, Forestry	74, 75
F. M. Husby, Ph.D.	Associate Professor, Animal Science	35, 36, 37
A. Jubenville, Ph.D.	Associate Professor, Resource Management	54, 55
L. J. Klebesadel*, Ph.D.	Research Agronomist	22
C. W. Knight, M.S.	Instructor, Agronomy	34, 52, 73
W. M. Laughlin*, Ph.D.	Research Soil Scientist	14
C. E. Lewis, Ph.D.	Associate Professor, Resource Management	34, 42, 49, 52
J. H. McBeath, Ph.D.	Associate Professor, Plant Pathology	52
J. D. McKendrick, Ph.D.	Associate Professor, Agronomy	17, 23, 55
G. A. Mitchell, Jr. Ph.D.	Assistant Professor, Agronomy	13, 74
W. W. Mitchell, Ph.D.	Professor, Agronomy	24, 38, 47, 51
B. J. Neiland, Ph.D.	Professor, Botany	21, 22, 27, 53, 56
W. R. Pfisterer	Instructor	75, 76
A. Peischel, Ph.D.	Instructor, Animal Science	39, 70
R. L. Taylor*, M.S.	Research Agronomist	22, 33
W. C. Thomas, Ph.D.	Associate Professor, Economics	45
K. Van Cleve, Ph.D.	Professor, Forestry (Soils)	18, 19, 20, 21
R. B. Weeden, Ph.D.	Professor of Resource Management and Wildlife	75
F. J. Wooding, Ph.D.	Associate Professor, Agronomy	32, 33
W. G. Workman, Ph.D.	Associate Professor, Economics	14, 18, 54

*Agricultural Research, Science and Education Administration, USDA Cooperating

SOURCE AND DISTRIBUTION OF FUNDS, FY 1981

Funding Source	Salary*	Other**	Salary Plus Other	Percent of Total
State	\$1,446,073	\$ 809,969	\$2,256,042	45.0
Hatch	483,177	230,088	713,265	14.2
Hatch Regional	57,163	33,497	90,660	1.8
McIntire-Stennis	128,357	22,889	151,246	3.0
AR/SEA	306,350	31,050	337,400	6.7
Coop Agreement	150,491	32,587	183,078	3.7
Grants & Contracts	694,351	588,811	1,283,162	25.6
TOTAL	\$3,265,962	\$1,748,891	\$5,014,853	100.0

*Does not include benefits.

**Personnel benefits, travel, supplies, equipment, contractual services, postage and freight.

GRANTS AND CONTRACTS BY SOURCE AND AMOUNT, FY 1981

State of Alaska:

Department of Natural Resources	\$ 24,253
CETA	43,482
Office of the Governor	46,115
Department of Commerce and Economic Development	1,779
Department of Health, Education and Welfare	10,114
Department of Health and Social Services	36,015

Federal:

Soil Conservation Service	17,789
Forest Service	100,176
Sea Grant	71,294
National Science Foundation	6,038
CR, SEA Special Grants	251,533
Department of Energy	81,261
Bureau of Indian Affairs	566
Department of the Navy	41,903

Other:

Alyeska Pipeline Service Company	120,848
Hewlett Foundation	60,906
Terrestrial Environmental Specialists, Inc.	306,605
Alaska Center for the Environment	3,245
Alaska Commercial Fishing and Agricultural Bank	30,473
Kuskokwim Native Association	2,281
Western Sun	23,780
Alaska Management and Planning	2,706

TOTAL	\$1,283,162
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SUMMARY OF EXPENDITURE BY MAJOR FUNCTION

Function	Salary	Other	Salary Plus Other	Percent of Total
Research Projects	\$2,215,562	\$1,004,154	\$3,219,716	64.2
Administration	491,083	203,263	694,346	13.9
Maintenance	393,897	439,247	833,144	16.6
Public Service Projects	165,420	102,227	267,647	5.3
TOTAL	\$3,265,962	\$1,748,891	\$5,014,853	100.0

RESEARCH PROJECTS

**SUMMARY OF RESEARCH PROJECT EXPENDITURES
BY SOURCE AND AMOUNT, FY 1981**

Funding Sources	Salary	Other	Salary Plus Other	Percentage of Total
State	\$ 660,826	\$ 190,345	\$ 851,171	26.4
Hatch	416,349	203,397	619,746	19.2
Hatch Regional	57,163	22,712	79,875	2.5
Federal	266,900	25,400	292,300	9.1
Coop. Agreement	150,491	32,587	183,078	5.7
McIntire-Stennis	128,357	22,889	151,246	4.7
Grants & Contracts	535,476	506,824	1,042,300	32.4
TOTAL	\$2,215,562	\$1,004,154	\$3,219,716	100.0

**DISTRIBUTION OF RESEARCH PROJECT EXPENDITURES
BY STATE GOALS, FY 1981**

	Amount	%
Goal 1: Increase the efficiency of production systems for food and wood products, including energy conservation and the development of new lands	\$1,978,749	61.5
Goal 2: Improve processing, transportation and marketing of food and wood products in Alaska for markets in Alaska and for export	11,522	0.4
Goal 3: Improve resource inventories and develop land-use planning for agriculture and forestry that will enhance environmental quality	478,536	14.9
Goal 4: Develop resource management for improving the quality of life, including revegetation procedures, landscaping and home gardening, and outdoor recreation	750,909	23.2
TOTAL	\$3,219,716	100.0

**DISTRIBUTION OF RESEARCH PROJECT EXPENDITURES
BY NATIONAL GOALS, FY 1981**

			Amount	%
Goal I:	Insure a stable and productive agriculture for the future through wise management of natural resources			
	TOTAL		\$1,014,692	31.5
	RPA*	101 Appraisal of Soil Resources	13,063	
	RPA	102 Soil, Plant, Water Nutrient Relationship	169,082	
	RPA	104 Alternative Uses of Land	47,566	
	RPA	107 Watershed Protection and Management	15,806	
	RPA	109 Adaptation to Weather and Weather Modification	52,645	
	RPA	110 Appraisal of Forest and Range Resources	69,252	
	RPA	111 Biology, Culture and Management of Forests and Timber-Related Crops	291,627	
	RPA	112 Improvement of Range Resources	332,210	
	RPA	113 Remote Sensing	23,441	
Goal II:	Protect forests, crops and livestock from insects, diseases and other hazards			
	TOTAL		\$ 61,793	1.9
	RPA	201 Control of Insects Affecting Forests	4,680	
	RPA	209 Control of Weeds and Other Hazards of Field Crops and Range	35,700	
	RPA	211 Control of Diseases of Livestock, Poultry and Other Animals	21,413	
Goal III:	Produce an adequate supply of farm and forest products at decreasing real production costs			
	TOTAL		\$1,222,186	38.0
	RPA	304 Improvement of Biological Efficiency of Fruit and Vegetable Crops	189,247	
	RPA	305 Mechanization of Fruit and Vegetable Crop Production	62,240	
	RPA	307 Improvement of Biological Efficiency of Field Crops	153,183	
	RPA	309 Production Management Systems for Field Crops	59,539	
	RPA	311 Improvement of Biological Efficiency in Production of Livestock, Poultry and Other Animals	636,523	
	RPA	313 Production Management Systems for Livestock, Poultry and Other Animals	46,191	
	RPA	315 Improvement of Structure, Facilities and General Purpose Farm Supplies and Equipment	75,263	
Goal IV:	Expand the demand for farm and forest products by developing new and improved products and processes and enhancing product quality		0	0
	* USDA National Research Problem Areas			

			Amount	%
Goal V:	Improve efficiency in the marketing system			
		TOTAL	\$ 12,576	0.4
	RPA 508	Development of Domestic Markets for Farm Products	2,706	
	RPA 509	Performance of Marketing Systems	566	
	RPA 511	Improvement in Agricultural Statistics	9,304	
Goal VI:	Expand export markets and assist developing nations			
		TOTAL	\$ 8,250	0.3
	RPA 601	Foreign Market Development	8,250	
Goal VII:	Protect consumer health and improve nutrition and well-being of the American people			
		TOTAL	\$ 1,099	0.0
	RPA 701	Insure Food Products Free of Toxic Contaminants Including Residues from Agricultural and Other Sources	1,099	
Goal VIII:	Assist rural Americans to improve their level of living			
		TOTAL	\$ 2,281	0.0
	RPA 804	Improvement of Economic Potential of Rural People	2,281	
Goal IX:	Promote community improvement including development of beauty, recreation, environment, economic opportunity, and public service			
		TOTAL	\$ 896,839	27.9
	RPA 901	Alleviation of Soil, Water and Air Pollution and Disposal of Wastes	371,644	
	RPA 902	Outdoor Recreation	107,992	
	RPA 903	Multiple Use Potential of Forest Land and Evaluation of Forestry Programs	263,265	
	RPA 905	Trees to Enhance Rural and Urban Environment	122,273	
	RPA 906	Culture and Protection of Ornamentals and Turf	31,665	
		TOTAL — All Goals	\$3,219,716	100.0

* USDA National Research Problem Areas

NATIONAL GOAL I

Insure a stable and productive agriculture for the future through wise management of Natural Resources.

Funding Sources	Salary	Other	Salary Plus Other	Percentage of Total
State	\$ 279,763	\$ 74,309	\$ 354,072	34.9
Hatch	78,867	25,058	103,925	10.2
Hatch Regional	11,982	3,760	15,742	1.6
McIntire-Stennis	113,416	19,751	133,167	13.1
Federal	172,700	15,000	187,700	18.5
Coop. Agreement	85,235	18,810	104,045	10.3
Grants & Contracts	73,550	42,491	116,041	11.4
TOTAL	\$ 815,513	\$ 199,179	\$ 1,014,692	100.0

Title: Cooperative Soil-Range Surveys on the Seward Peninsula.

Acct. No.: 33236-230770

National Goal: I, RPA: 101

State Goal: 3

Termination: 2/28/82

SYs 0.0

Principal Investigator: P. Scorup

Objectives: This is a cooperative project with the Soil Conservation Service, the Bureau of Land Management and the Geophysical Institute with a primary objective to complete soil and range surveys for all reindeer grazing allotments on the Seward Peninsula. Landsat imagery, computer data, and color infrared photographs are being utilized to obtain range composition and yield data, develop range site descriptions, and produce maps. Data from this project will ultimately be used to develop comprehensive range management plans for the reindeer industry.

Funding Source:	Salary	Other	Total
U.S. Soil Conservation Service	\$ 6,500	\$ 6,563	\$13,063

Title: Fertility Evaluation and Improvement of Alaskan Soils.

Acct. No.: 33336-150040, 36213-230690

National Goal: I, RPA: 102

State Goal: 1

Termination: 9/30/81

SYs 0.2

Principal Investigator: G. Mitchell

Objectives: This project is to develop and correlate soil nutrient extractants with plant responses for Alaskan conditions; to survey the fertility status of remote Alaskan soils as an aid in evaluating their agricultural potential; and to relate (for specific soil types) under field conditions appropriate composition and quantities of required fertilizer.

Funding Sources:	Salary	Other	Total
State	\$ 3,629	\$ 762	\$ 4,391
Hatch	29,111	9,886	38,997
Total	\$32,740	\$10,648	\$43,388

Title: Determination of Soil Amendments for Optimum Crop Production on Agricultural Soils in Alaska.

Acct. No.: FR/SEA WRU 5618-20780, 33322-230450

National Goal: I, RPA: 102

State Goal: 1

Termination: 1985
SYs 0.0

Principal Investigator: W. Laughlin

Objectives: This project is to determine locally adapted optimum soil management practices together with quantities of major, secondary and minor elements required for maximum efficient production of forages, oilseed crops, and vegetables.

Funding Source:	Salary	Other	Total
Federal	\$ 85,600	\$ 5,000	\$ 90,600
Coop. Agreement	28,731	6,363	35,094
Total	\$114,331	\$11,363	\$125,694

Title: Private Land Use in Alaska.

Acct. No.: 33354-150040

National Goal: I, RPA: 104

State Goal: 3

SYs 0.2

Principal Investigator: W. Workman

Objectives: This research is to examine the efficiency and equity implications of various institutions affecting private land use in Alaska.

Funding Source:	Salary	Other	Total
State	\$10,375	\$5,538	\$15,913

Title: Study of Land Ownership Patterns in the Chugach Region.

Acct. No.: 33216-230750

National Goal: I, RPA: 104

State Goal: 3

Termination: 10/13/81
SYs 0.2

Principal Investigator: J. Drew

Objectives: This research is to study the land ownership patterns in the Chugach region according to the intent of Sections 1429 and 1430 of the Alaska National Interest Lands Conservation Act (Public Law 96-487) dated December 2, 1980.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$18,650	\$13,003	\$31,653

Title: Water Balance Procedures for a Boreal Forest Watershed.

Acct. No.: 36505-230700

National Goal: 1, RPA: 107

State Goal: 4

Termination: 7/30/84
SYs 0.0

Principal Investigator: J. Fox

Objectives: The objective of this project is to establish, test, and/or improve water balance procedures for small, boreal forest watersheds. Five stations in the Spinach Creek watershed were monitored: solar radiation, temperature, and relative humidity were monitored at one location, preparations were made for a soil infiltration study, and a stream gaging station was established on Spinach Creek. In addition, work was initiated on the development of a net radiation model and the modification of a water balance model.

Funding Source:	Salary	Other	Total
McIntire-Stennis	\$6,205	\$ 709	\$6,914

Title: Environmental Chemistry Determinations for Subarctic Watersheds.

Acct. No.: 33292-230640

National Goal: I, RPA: 107

State Goal: 4

Termination: 6/30/81
SYs 0.0

Principal Investigator: J. Yarie

Objectives: This project is for chemical analysis of subarctic headwater streams.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$6,597	\$2,295	\$8,892

Title: Environmental Conditions Affecting Crop Growth in Alaska.

Acct. No.: 33308-150040, 36211-230690
33363-230680(NC-94)

National Goal: I, RPA: 109

State Goal: 3

Termination: 6/30/79
SYs 0.4

Principal Investigator: L. Allen

Objectives: This project is to relate observed weather parameters to plant development, yield and quality; to define mathematical models for predicting development, yield and quality; and to evaluate methods of improving the plant micro-environment.

Funding Sources:	Salary	Other	Total
State	\$ 4,527	\$ 1,150	\$ 5,677
Hatch	25,214	6,012	31,226
Hatch Regional	11,982	3,760	15,742
Total	\$41,723	\$10,922	\$52,645

Title: Range Types and Productivity for Ungulates in Portions of the Cook Inlet Basin, Alaska.

Acct. No.: 36502-230700

National Goal: I, RPA: 110

State Goal: 3

Termination: 10/10/80
SYs 0.0

Principal Investigator: J. McKendrick

Objectives: Ungulate range types in the boreal forest and alpine zones in a section of Cook Inlet Basin, Alaska, will be measured to provide a basis for calculating a range resource inventory.

Funding Source:	Salary	Other	Total
McIntire-Stennis	\$4,172	\$1,673	\$5,845

Title: Range Resource Appraisal for Improved Management.

Acct. No.: 33249-150040

National Goal: I, RPA: 110

State Goal: 3

SYs 0.5

Principal Investigator: J. McKendrick

Objectives: This project is designed to acquire data on the production and carrying capacity of the major range types in southcentral Alaska. Changes in seasonal forage quality and changes in animal forage preferences as well as animal performances will be determined.

Funding Source:	Salary	Other	Total
State	\$30,763	\$ 5,645	\$36,408

Title: Documentation and Description of Alaska Vegetation Types

Acct. No.: 33292-230650

National Goal: I, RPA: 110

State Goal: 3

Termination: 10/1/81
SYs 0.0

Principal Investigator: K. Van Cleve

Objectives: This research is to develop a data storage and retrieval system for vegetation data for Alaskan vegetation types; and to utilize this information to develop vegetation descriptions and site information for selected Alaskan vegetation types.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$ 7,878	\$ 4,172	\$12,050

Title: Livestock Grazing Fee Study

Acct. No.: 33216-251800

National Goal: I, RPA: 110

State Goal: 3

Termination: 9/24/80
SYs 0.1

Principal Investigator: W. Workman and E. Arobio

Objectives: This research is to propose and evaluate on the basis of economic and other criteria several potential techniques for establishing grazing fees on state-owned lands in Alaska.

Funding Source:	Salary	Other	Total
Department of Natural Resources	\$ 9,445	\$ 5,504	\$14,949

Title: Forest Soils Research Support Lab.

Acct. No.: 33292-150040

National Goal: I, RPA: 111

State Goal: 1 SYs 0.3

Principal Investigator: K. Van Cleve

Objectives: This work provides support for research on relationships between forest types within framework of nutrient cycling.

Funding Source:	Salary	Other	Total
State	\$105,341	\$ 30,444	\$135,785

Title: Role of Metal Chelates in Nutrient Mobility in Subarctic Alaskan Forest Soils.

Acct. No.: 36791-245240

National Goal: I, RPA: 111

State Goal: 1 Termination: 1/31/81
SYs 0.0

Principal Investigator: R. Candler

Objectives: This research is to isolate and identify natural chelates from soils that are suspected to be important in plant nutrition. Soil extracts from Birch and Aspen stands are compared.

Funding Source:	Salary	Other	Total
National Science Foundation	\$3,497	\$2,541	\$6,038

Title: Preliminary Site Productivity Determination for Black Cottonwood and Balsam Poplar in Interior Alaska.

Acct. No.: 33292-230580

National Goal: I, RPA: 111

State Goal: 1

Termination: 10/1/81
SYs 0.0

Principal Investigator: K. Van Cleave

Objectives: Cottonwood is rapid growing in interior Alaska. At this time, no information is available on growth and yield for this species. Development of productivity information in the form of growth and yield tables will greatly expand our understanding of forest growth in general and provide critical information for this tree species.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$5,044	\$1,214	\$6,258

Title: Site Quality Comparison for Tanana River Balsam Poplar and Susitna River Black Cottonwood.

Acct. No.: 33292-230740

National Goal: I, RPA: 111

State Goal: 1

Termination: 9/30/81
SYs 0.0

Principal Investigator: J. Yarie

Objectives: Growth and yield tables will be developed from a small sample of cottonwood and balsam poplar. Understory and soil physical and chemical variables will be correlated to growth and compared between and within each major river drainage.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$10,392	\$ 5,373	\$15,765

Title: Nutrient Cycling in Selected Interior Alaska Forest Types.

Acct. No.: 36501-230700

National Goal: I, RPA: 111

State Goal: 1

Termination: 9/30/80
SYs 0.0

Principal Investigator: K. Van Cleve

Objectives: This project is to establish the distribution of biomass and the cycle of certain chemical elements with selected age classes of birch, aspen, white spruce, and black spruce; and to assess the effect of artificial amendments on tree growth in birch, aspen, white spruce, and black spruce.

Funding Source:	Salary	Other	Total
McIntire-Stennis	\$103,039	\$ 17,369	\$120,408

Title: Artificial Regeneration of Trees and Shrubs Following Prescribed Fire.

Acct. No.: 33216-230320

National Goal: I, RPA: 111

State Goal: 4

Termination: 12/31/81
SYs 0.0

Principal Investigator: B. Neiland

Objectives: This project is to develop procedures for the artificial regeneration of trees and shrubs in interior Alaska following prescribed fire. Three times after fire, seeding plots were established for each of ten species along with a prepared seedbed. These continue to be monitored for both natural and artificial germination, establishment and growth.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$1,349	\$ 273	\$1,622

Title: Reproductive Capacity and Characteristics of Trees and Shrubs in Alaska.

Acct. No.: 33216-230620

National Goal: I, RPA: 111

State Goal: 4

Termination: 10/1/81
SYs 0.0

Principal Investigator: B. Neiland

Objectives: This research is to develop an information matrix on the reproductive capacity and characteristics of important trees and shrubs in interior Alaska; to identify deficiencies in present knowledge; and to plan field and greenhouse research to remedy these deficiencies and conduct pilot studies. Through searches of literature, published and unpublished reports, and agency records, and correspondence with workers in the field in Canada and Scandinavia, the matrix of available information has been largely completed. Information which is lacking is being identified and research plans are being prepared to provide this information.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$4,198	\$1,553	\$5,751

Title: Breeding and Production — Forage Crops for Hay, Pasture, and Other Uses Including Turf.

Acct. No.: AR/SEA WRU 5618-20100, 33321-230450

National Goal: I, RPA: 112

State Goal: 1

Termination: 1984
SYs 0.0

Principal Investigator: L. Klebesadel and R. Taylor

Objectives: This project is to develop new and improved genetic populations, breeding lines, and cultivars of forage crops that combine improved yield potentials and favored quality characteristics, including reduced contents of undesirable constituents, with better resistance to pests, tolerance to environmental stress, conservation of scarce resources, and adaptation for mechanized culture.

Funding Source:	Salary	Other	Total
Federal	\$ 87,100	\$ 10,000	\$ 97,100
Coop. Agreement	56,504	12,447	68,951
Total	\$143,604	\$ 22,447	\$166,051

Title: Research on Red Meat — Range/Homer.

Acct. No.: 33259-150040

National Goal: I, RPA: 112

State Goal: 1 SYs 0.1

Principal Investigator: J. McKendrick

Objectives: This research is to investigate range-carrying capacities and effects of grazing intensities by cattle on range conditions and trends in the Homer vicinity.

Funding Source:	Salary	Other	Total
State	\$26,631	\$ 7,763	\$34,394

Title: Bison Diet Study.

Acct. No.: 33389-150040

National Goal: I, RPA: 112

State Goal: 1 SYs 0.0

Principal Investigator: J. McKendrick

Objectives: This project is aimed at identifying plant species that are important in the natural diet of the Delta bison herd. The various range types used by the bison will be identified and the seasonal change in the forage quality of those plants will be measured.

Funding Source:	Salary	Other	Total
State	\$2,234	\$5,525	\$7,759

Title: Research on Red Meat — Agronomy/Homer.

Acct. No.: 33261-150040

National Goal: I, RPA: 112

State Goal: 1

SYs 0.1

Principal Investigator: W. Mitchell

Objectives: This research is to study the management of native bluejoint hayland; compare performance of experimental perennials with standard varieties in view of providing improved species for forage production and grazing; and test use of annuals for forage production.

Funding Source:	Salary	Other	Total
State	\$23,826	\$ 6,024	\$29,850

Title: Development and Application of Plant Materials for Forage, Pasture, Turf, and Conservation Uses.

Acct. No. 33306-150040, 36214-230690

National Goal: I, RPA: 112

State Goal: 4

Termination: 4/1/81
SYs 0.0

Principal Investigator: W. Mitchell

Objectives: This research is to select superior performing grasses within native species and compare with standard forage grasses in different agricultural regions of the state; to determine response of selections and standards to range of fertilizer treatments and determine forage quality as related to different conditions; to determine applicability of forage and grazing entries for supplemental pasture; to select superior performing grasses for conservation uses in different regions of the state; to select superior performing grasses for turf purposes; and to expand upon knowledge base for additional exploratory and collection efforts.

Funding Source:	Salary	Other	Total
State	\$53,175	\$ 7,279	\$60,454
Hatch	24,542	9,160	33,702
Total	\$77,717	\$16,439	\$94,156

Title: Resource Mapping.

Acct. No.: 33392-150040

National Goal: I, RPA: 113

State Goal: 3

SYs 0.5

Principal Investigator: P. Scorup

Objectives: Landsat imagery, computer colored projects and color infrared aerial photographs are being interpreted and correlated with range yield data to produce range site maps on the Seward Peninsula. These maps will be used to help develop comprehensive range management plans for the reindeer industry.

Funding Source:	Salary	Other	Total
State	\$19,262	\$ 4,179	\$23,441

NATIONAL GOAL II

Protect forests, crops and livestock from insects, diseases and other hazards.

Funding Sources	Salary	Other	Salary Plus Other	Percentage of Total
Federal	\$31,700	\$ 4,000	\$35,700	57.7
Grants & Contracts	15,000	11,093	26,093	42.3
TOTAL	\$46,700	\$15,093	\$61,793	100.0

Title: Rate of Woodborer Infestation and Development and Impact on Wood Quality in Recently Felled White Spruce Trees and Logging Slash.

Acct. No.: 33216-230630

National Goal: II, RPA 201

State Goal: 1

Termination: 12/31/82
SYs 0.0

Principal Investigator: B. Neiland

Objectives: This research is to determine time and rate of infestation of felled and damaged standing trees by woodborers following harvest; determine life cycle for woodborer species found; and determine the impact of woodborer damage, including inoculation of fungi, on quality of lumber produced from infested trees. Literature search was made during winter 1980-81; sampling system was developed and field tested. At weekly intervals, the sample unit of trees was investigated for borer infestation; at intervals determined by life stage, borer larvae were collected and development recorded. Fungal inoculations were made on some damaged trees to follow rates of infection.

Funding Source	Salary	Other	Total
U.S. Forest Service	\$3,564	\$1,116	\$4,680

Title: Weed Control Technology for Protecting Crops, Grazing Lands, Aquatic Sites, and Noncropland.

Acct. No.: AR/SEA WRU 5618-20280

National Goal: II, RPA: 209

State Goal: 1

Termination: 1985
SYs 1.0

Principal Investigator: J. Conn

Objectives: Develop new and improved cultural and management practices for Alaskan conditions that increase forage crop yields, promote winter survival and persistence, minimize production and utilization losses, improve feeding quality, conserve and use scarce resources efficiently, and enhance environmental quality.

Funding Source:	Salary	Other	Total
Federal	\$31,700	\$ 4,000	\$35,700

Title: Control of Brucellosis in Alaska — Vaccine Testing and Serology.

Acct. No.: 33411-230730

National Goal: II, RPA: 211

State Goal: 1

Termination: 9/30/81
SYs

Principal Investigator: R. Dieterich

Objectives:

Brucellosis in Alaskan reindeer remains one of the major problems faced by the industry. Four vaccines have been tested during the last five years and current results are encouraging that a killed vaccine made from the actual organism (*Brucella suis* type 4) which causes the disease in reindeer will be effective. This vaccine is in its second year of testing. Pending approval, this product will be tested further in the field to judge its effectiveness under actual conditions. This vaccine testing involves measuring the response of experimentally vaccinated reindeer to infection and documenting their serologic response to both vaccination and infection.

Funding Source:

USDA — Science
& Education
Administration

Salary

\$11,436

Other

\$ 9,977

Total

\$21,413

NATIONAL GOAL III

Produce an adequate supply of farm and forest products at decreasing real production costs.

Funding Sources	Salary	Other	Salary Plus Other	Percentage of Total
State	\$333,364	\$106,501	\$ 439,865	36.0
Hatch	306,861	168,706	475,567	38.9
Hatch Regional	41,871	15,183	57,054	4.7
Federal	62,500	6,400	68,900	5.6
Coop. Agreement	65,256	13,777	79,033	6.5
Grants & Contracts	37,002	64,765	101,767	8.3
TOTAL	\$846,854	\$375,332	\$1,222,186	100.0

Title: Fruit Improvement.

Acct. No.: 33334-150040, 33365-230690

National Goal: III, RPA: 304

State Goal: 1

Termination: 9/30/82
SYs 0.2

Principal Investigator: D. Dinkel

Objectives: Fruit cultivars and strains from indigenous and exotic sources will be compared and tested for adaptation. Cultural practices will be devised for the day neutral type stawberries that are designed to develop annual production. Propagation techniques will be devised to increase desirable clones of hardy tree fruit and small fruit.

Funding Sources:	Salary	Other	Total
State	\$ 8,672	\$ 2,597	\$11,269
Hatch	33,166	8,855	42,021
Total	\$41,838	\$11,452	\$53,290

Title: Vegetable Improvement for Interior Alaska.

Acct. No.: 33366-230690

National Goal: III, RPA: 304

State Goal: 1

Termination: 9/30/82
SYs 0.2

Principal Investigator: D. Dinkel

Objectives: This research is to evaluate and select new vegetable cultivars for Alaska; to devise cultural practices to improve yields of adapted crops and to extend the production potential to other crop, and to develop improved nutrition for adapted vegetable crop.

Funding Source:	Salary	Other	Total
Hatch	\$21,397	\$ 5,914	\$27,311

Title: Vegetable Breeding and Variety Testing in Alaska.

Acct. No.: AR/SEA WRU 5618-20020, 33320-230450

National Goal: III, RPA: 304

State Goal: 1

Termination: 1984
SYs 0.0

Principal Investigator: C. Dearborn

Objectives: This research is to develop new and improved populations, breeding lines, and varieties of vegetables that combine yield potential and favored quality characters, including reduced contents of undesirable constituents, with better resistance to pests, tolerance to environmental stress, and adaptation for mechanical culture, harvest and handling; and new and improved cultural and management practices that increase vegetable yields, minimize production losses, improve quality attributes and conserve and use scarce resources efficiently.

Funding Source:	Salary	Other	Total
Federal	\$17,320	\$ 2,000	\$19,320
Coop. Agreement	19,904	4,234	24,138
Total	\$37,224	\$ 6,234	\$43,458

Title: Improved Potato Varieties and Production Practices for Alaska.

Acct. No.: AR/SEA WRU 5618-20020, 33320-230450

National Goal: III, RPA: 304

State Goal: 1

Termination: 1984
SYs 0.0

Principal Investigator: C. Dearborn

Objectives: This research is to develop new and improved genetic populations, breeding lines, and varieties of potatoes that combine yield potential and favored quality characters, including reduced contents of undesirable constituents, with better resistance to pests, tolerance to environmental stress, and adaptation to mechanical culture, harvest and handling; and new and improved cultural and management practices that increase potato yields, minimize production losses, improve quality attributes and conserve and use source resources efficiently.

Funding Sources:	Salary	Other	Total
Federal	\$25,980	\$ 3,000	\$28,980
Coop. Agreement	29,856	6,352	36,208
Total	\$55,836	\$ 9,352	\$65,188

Title: Waste Heat Utilization for Horticultural Crops.

Acct. No.: 33379-150040

National Goal: III, RPA: 305

State Goal: 1

SYs 0.0

Principal Investigator: D. Dinkel

Objectives: This research is to investigate and devise practices for the use of reject heat and geothermal heat for vegetables, ornamental, and fruit production; and to determine the feasibility of commercial production using reject heat.

Funding Source:	Salary	Other	Total
State	\$47,586	\$14,654	\$62,240

Title: Small Grain Production in the Tanana Valley of Interior Alaska.

Acct. No.: 33300-150040, 38000-230690

National Goal: III, RPA: 307

State Goal: 1

Termination: 9/30/84
SYs 0.1

Principal Investigator: F. Wooding

Objectives: This research is to develop sufficient technical knowledge, through a broad research program of variety testing and cultural practices, to make possible efficient production of barley, oats, and wheat in a subarctic environment; to evaluate triticale as a potential new grain crop; and to determine the quality of Alaska-produced grains.

Funding Sources:	Salary	Other	Total
State	\$42,787	\$ 9,553	\$52,340
Hatch	12,724	6,115	18,839
Total	\$55,511	\$15,668	\$71,179

Title: Introduction, Multiplication, Maintenance, Evaluation, and Cataloging of Plant Germ Plasm.

Acct. No.: 33361-230680 (W-6)

National Goal: III, RPA: 307

State Goal: 1

Termination: 1985
SYs 0.0

Principal Investigator: F. Wooding

Objectives: This research is to evaluate germ plasm developed in other northern regions of the world for crops currently being grown in Alaska (wheat, oats, barley, and rapeseed) and to evaluate germ plasm for potential new crops for Alaska (flax, safflower, sunflower, buckwheat, millet, and grain amaranth).

Funding Source:	Salary	Other	Total
Hatch Regional	\$ 299	\$2,066	\$2,365

Title: Improved Barley, Oat and Wheat Varieties and Production Practice for Alaska.

Acct. No.: AR/SEA WRU 5618-20050, 33323-230450

National Goal: III, RPA: 307

State Goal: 1

Termination: 1984
SYs 0.0

Principal Investigator: R. Taylor

Objectives: This research is to develop new and improved genetic populations, breeding lines, and varieties of small grain that combine yield potentials and favored quality characteristics, including reduced contents of undesirable constituents, with better resistance to pests, tolerance to environmental stress, responsiveness to new cultural and management practices and adaptation for mechanized culture, harvesting and handling; and new and improved cultural and management practices that increase small grain yields through disease, insect, and weed control, that minimize production losses, and that conserve more efficiently scarce or irreplaceable resources.

Funding Source:	Salary	Other	Total
Federal	\$19,200	\$ 1,400	\$20,600
Coop. Agreement	15,496	3,191	18,687
Total	\$34,696	\$ 4,591	\$39,287

Title: Improving Rapeseed Production.

Acct. No.: 33344-150040, 33368-230690

National Goal: III, RPA: 307

State Goal: 1

Termination: 4/30/82
SYs 0.5

Principal Investigator: C. Knight

Objectives: This research is to evaluate rapeseed varieties and cultural practices for interior Alaska. Major emphasis is placed in the use of rapeseed in crop rotation and conservation tillage systems.

Funding Sources:	Salary	Other	Total
State	\$ 8,913	\$ 1,924	\$10,837
Hatch	22,861	6,654	29,515
Total	\$31,774	\$ 8,578	\$40,352

Title: Production Cost and Crop Management for Small Grains and Rapeseed in Interior Alaska.

Acct. No.: 33381-150040, 33369-230690

National Goal: III, RPA: 309

State Goal: 1

Termination: 9/30/81
SYs 0.3

Principal Investigator: C. Lewis

Objectives: This research is to evaluate the effects of various managment systems on costs of production of small grains and rapeseed, and to prepare enterprise reports on economies of size, alternatives in land, labor, and machinery; and financial management returns.

Funding Sources:	Salary	Other	Total
State	\$31,253	\$ 7,166	\$38,419
Hatch	15,534	5,586	21,120
Total	\$46,787	\$12,752	\$59,539

Title: Nutrition of High-Producing Dairy Cows.

Acct. No.: 33357-230680 (NC-115)

National Goal: III, RPA: 311

State Goal: 1

Termination: 9/30/82
SYs 0.0

Principal Investigator: A. Brundage

Objectives: This research is to determine the utilization of shell-fish waste as an alternative protein source for lactating dairy cows and growing dairy steers and heifers.

Funding Source:	Salary	Other	Total
Hatch Regional	\$ 8,707	\$ 1,889	\$10,596

Title: Utilization of Alaskan Marine By-Products in Rations for Domestic Livestock.

Acct. No.: 34930-238680

National Goal: III, RPA: 311

State Goal: 1

Termination: 10/31/83
SYs 0.1

Principal Investigator: F. Husby and A. Brundage

Objectives: This research is to determine the utilization of marine by-products as protein and energy sources in rations for domestic livestock, including both ruminants and non-ruminants.

Funding Sources:	Salary	Other	Total
Sea-Grant	\$37,002	\$34,292	\$71,294

Title: Utilization of High Protein Cereal Grains Produced in Alaska for Quality Pork Production.

Acct. No.: 33298-150040, 33367-230690

National Goal: III, RPA: 311

State Goal: 1

Termination: 12/31/82
SYs 0.4

Principal Investigator: F. Husby

Objectives: This research is to determine the nutritional value and quality of high-protein cereal grains produced in northern latitudes for efficient pork production, and to evaluate marine by-products, plant protein or crystalline amino acids as the source of limiting amino acids to improve the protein quality of these cereal grains for growing and finishing pigs.

Funding Sources:	Salary	Other	Total
State	\$27,206	\$19,220	\$46,426
Hatch	24,698	15,084	39,782
Total	\$51,904	\$34,304	\$86,208

Title: Red Meat Research.

Acct. No.: 33378-150040

National Goal: III, RPA: 311

State Goal: 1

SYs 0.1

Principal Investigator: F. Husby

Objectives: This research is to determine the nutritional requirements of beef animals under Alaskan conditions for optimum production.

Funding Source:	Salary	Other	Total
State	\$27,825	\$8,714	\$36,539

Title: Red Meat — Animal Science Research/Homer.

Acct. No.: 33260-150040

National Goal: III, RPA: 311

State Goal: 1 SYs 0.0

Principal Investigator: F. Husby

Objectives: Project objectives are to determine the winter feeding requirements and management for cattle, and to determine the feeding value of native blue-joint (*Calamagrostis canadensis*) grasslands during the summer grazing on the Kenai Peninsula. Hay quality on the Lower Kenai Peninsula is often less than the requirement for protein, and energy to maintain body weight during the winter. Low quality hay is produced due to vagaries of weather during peak harvesting periods. Summer grazing gains will be evaluated following winter feeding on local hay.

Funding Source:	Salary	Other	Total
State	\$13,947	\$13,372	\$27,319

Title: Dairy Cattle Breeding and Management for Milk Production in Alaska.

Acct. No.: 33304-150040, 36212-230690

National Goal: III, RPA: 311

State Goal: 1 Termination: 9/30/82
SYs 0.0

Principal Investigator: A. Brundage

Objectives: This research is to evaluate the interrelationship of dairy cattle breeding with selection for milk production with selected elements for dairy cattle management in Alaska.

Funding Sources:	Salary	Other	Total
State	\$105,195	\$ 25,064	\$130,259
Hatch	136,150	109,783	245,933
Total	\$241,345	\$134,847	\$376,192

Title: Improving Dairy Cattle Through Breeding with Special Emphasis on Selection.

Acct. No.: 33358-230680 (NC-2)

National Goal: III, RPA: 311

State Goal: 1

Termination: 9/30/82
SYs 0.0

Principal Investigator: A. Brundage

Objectives: This research is to evaluate the effectiveness and the limitation of single trait selection for milk yield among sires available in A. I. in designed experiments partially replicated at different locations, including measurement of correlated responses in traits of economic and theoretical interest.

Funding Source:	Salary	Other	Total
Hatch Regional	\$21,849	\$ 6,526	\$28,375

Title: Forage Production and Utilization Systems as a Base for Livestock Production.

Acct. No.: 33356-230680 (NC-114)

National Goal: III, RPA: 313

State Goal: 1

Termination: 9/30/82
SYs 0.0

Principal Investigator: W. Mitchell and A. Brundage

Objectives: This research is to study production and utilization of annual forage (barley/peas, oats/peas, alfalfa, sweet clover, and winter rye) and perennial forages (Bering hairgrass, brome grass, and timothy); to study forage quality components as a function of time, species, and morphological parts of plants; and to utilize agronomic and animal science data from the project to evaluate economic alternatives within various livestock and crop combinations.

Funding Source:	Salary	Other	Total
Hatch Regional	\$11,016	\$ 4,702	\$15,718

Title: The Growth Performance of Yearling Steers Under Range and Feedlot Conditions on the Lower Kenai Peninsula.

Acct. No.: 33216-252250

National Goal: III, RPA: 313

State Goal: 1

Termination: 3/31/82
SYs 0.0

Principal Investigator: A. Peischel

Objectives: Twenty-six head of cross-bred yearling steers were purchased from Dawson Creek, Canada and twenty-four purchased locally. Cattle were randomly allotted into two groups (13 Canadian and 12 local in each group) and put on native range pastures at Lookout Mountain. Cattle are weighed every two weeks and rate of gain recorded. Twelve animals (6 Canadian and 6 local) from one group are being used for an intake and digestibility study of native range forage consumption and digestibility. Cattle will be brought into the feedlot (middle of September) and fed a finishing ration. Cattle will be sold and slaughtered with carcass evaluation for yield/grade being the final comparison between the two groups of cattle.

Funding Source:	Salary	Other	Total
Alaska Commercial Fishing and Agricultural Bank	— 0 —	\$30,473	\$30,473

Title: Alternate Energy Source.

Acct. No.: 33393-150040, 36210-230690

National Goal: III, RPA: 315

State Goal: 1

Termination: 9/30/84
SYs 0.0

Principal Investigator: L. Allen

Objectives: This research is to investigate the availability of renewable energy sources and consider some applications to Alaska's high latitude agriculture; and to evaluate energy efficient structures as a means of reducing conventional energy use.

Fundings Sources:	Salary	Other	Total
State	\$19,980	\$ 4,237	\$24,217
Hatch	40,331	10,715	51,046
Total	\$60,311	\$14,952	\$75,263

NATIONAL GOAL IV

Expand the demand for farm and forest products by developing new and improved products and processes and enhancing product quality.

Funding Source	Salary	Other	Total
	0	0	0

NATIONAL GOAL V

Improve efficiency in the marketing system.

Funding Source	Salary	Other	Salary Plus Other	Percentage of Total
Grants & Contracts	\$ 9,539	\$ 3,037	\$12,576	100.0

Title: Market Survey for Alaskan Produced Ducks, Geese and Rabbits.

Acct. No.: 33216-257830

National Goal: V, RPA: 508

State Goal: 2

Termination: 1/10/81
SYs 0.0

Principal Investigator: C. Lewis

Objectives: Determine volumes of ducks, geese, and rabbits sold on the wholesale and retail markets in Anchorage and Fairbanks. Investigate national consumption or production, imports and exports of ducks, geese and rabbits.

Funding Source:	Salary	Other	Total
Alaska Management and Planning	\$1,529	\$1,177	\$2,706

Title: Economic Feasibility of Processing and Marketing Fish By-Products at Goodnews Bay.

Acct. No.: 33216-235940

National Goal: V, RPA: 509

State Goal: 2

Termination: 9/30/80
SYs 0.0

Principal Investigator: J. Drew

Objectives: At the request of the Bureau of Indian Affairs, a feasibility study considering the potential for processing herring carcasses at Goodnews Bay in Western Alaska was undertaken. The major influencing factor is the high transportation cost out of the region coupled with low demand within the region.

Funding Source:	Salary	Other	Total
Bureau of Indian Affairs	\$ 352	\$ 214	\$ 566

Title: Alaska Crop and Livestock Statistics.

Acct. No.: 33236-230720

National Goal: V, RPA: 511

State Goal: 3

Termination: 6/30/81

Principal Investigator: S. Restad

Objectives: This research is to collect and distribute agricultural statistics in a cooperative program with the Statistical Crop Reporting Service, U.S. Department of Agriculture, the Alaska Division of Agriculture and the Cooperative Extension Service.

Funding Source:	Salary	Other	Total
Alaska Division of Agriculture and Cooperative Extension Service	\$7,658	\$1,646	\$9,304

NATIONAL GOAL VI

Expand export markets and assist developing nations.

Funding Sources	Salary	Other	Salary Plus Other	Percentage of Total
Hatch	\$ 6,204	\$ 2,046	\$ 8,250	100.0

Title: Analysis of Export Markets for Alaskan Barley and Rapeseed Products.

Acct. No.: 33342-230500

National Goal: VI, RPA: 601

State Goal: 2

Termination: 9/30/81
SYs 0.0

Principal Investigator: W. Thomas

Objectives: This research is to identify economic and institutional variables for major foreign markets relative to Alaska barley and related projects; to analyze alternative types of export marketing systems which may be applicable to Alaska; to delineate major transportation alternatives; and to assess relationships between market organizations and farm income.

Funding Sources:	Salary	Other	Total
Hatch	\$6,204	\$2,046	\$8,250

NATIONAL GOAL VII

Protect consumer health and improve nutrition and well-being of the American people.

Funding Source	Salary	Other	Salary Plus Other	Percentage of Total
Grants & Contracts	\$ 261	\$ 838	\$1,099	100.0

Title: Data Collection, Analysis & Reporting on Alaska Pesticide Use.

Acct. No.: 33236-230390

National Goal: VII, RPA: 701

State Goal: 1

Termination: 10/12/80

SYs 0.0

Principal Investigator: W. Mitchell

Objectives: This study is to conduct a statewide survey of pesticide usage in Alaska in cooperation with the U.S.D.A. Statistical Reporting Service.

Funding Source:	Salary	Other	Total
USDA — Science & Education Administration	\$ 261	\$ 838	\$1,099

NATIONAL GOAL VIII

Assist Rural Americans to improve their level of living.

Funding Source	Salary	Other	Salary Plus Other	Percentage of Total
Grants & Contracts	\$1,452	\$ 829	\$2,281	100.0

Title: Support and Advisory Services for the Kuskokwim Native Association for a Commercial Farming Project in Aniak, Alaska.

Acct. No.: 33216-258170

National Goal: VIII, RPA: 804

State Goal: 1

Termination: 6/30/81
SYs 0.0

Principal Investigator: C. Lewis

Objectives: Provide horticultural support services to the Kuskokwim Native Association for production of crops for the commercial market. Of specific concern are production techniques and crop and soil management.

Funding Source:	Salary	Other	Total
Kuskokwim Native Association	\$1,452	\$ 829	\$2,281

NATIONAL GOAL IX

Promote community improvement including development of beauty, recreation, environment, economic opportunity, and public service.

Funding Source	Salary	Other	Salary Plus Other	Percentage of Total
State	\$ 47,699	\$ 9,535	\$ 57,234	6.4
Hatch	24,417	7,587	32,004	3.6
Hatch Regional	3,310	3,769	7,079	0.8
McIntire-Stennis	14,941	3,138	18,079	2.0
Grants & Contracts	398,672	383,771	782,443	87.2
TOTAL	\$489,039	\$407,800	\$896,839	100.0

Title: Revegetation of Alaskan Coal Mine Spoils.

Acct. No.: 33237-243160

National Goal: IX, RPA: 901

State Goals: 4

Termination: 2/28/82
SYs 0.3

Principal Investigator: W. Mitchell

Objectives: This research is to determine plant materials appropriate for use on coal mine spoils and disturbances; characterize soils and spoil materials and determine amendments necessary to establish and sustain growth; and study natural revegetation processes relevant to mine spoil revegetation.

Funding Source:	Salary	Other	Total
U.S. Department of Energy	\$44,323	\$35,160	\$79,483

Title: Soil and Water Conservation in Alaska (Phase I and Phase II).

Acct. No: I 33216-230530, II 33216-230531

National Goal: IX, RPA: 901

State Goal: 4

Termination: I 1/1/82,
II 9/30/83
SYs 0.9

Principal Investigator: J. Drew

Objectives: This research is to develop soil and managment systems for effectively controlling soil and water erosion in interior Alaska. Major efforts are directed toward developing tillage systems and residue management systems for controlling soil and water erosion during the production of barley and rapeseed.

Funding Source:	Salary	Other	Total
U.S.D.A.	\$115,123	\$113,898	\$229,021

Title: Conduct Tillage Studies Related to Erosion Control and Crop Production in Interior Alaska.

Acct. No.: 33216-230430

National Goal: IX, RPA: 901

State Goal: 4

Termination: 9/30/81
SYs 0.1

Principal Investigator: C. Lewis

Objectives: This research is to investigate no-till, minimum tillage, and conventional tillage methods; monitor and evaluate the effects of each on yields, soil moisture, soil temperature, soil nutrients, and energy requirements; and calculate the costs incurred in grain and oilseed production for each method.

Funding Source:	Salary	Other	Total
U.S. Soil Conservation Service	\$3,448	\$1,278	\$4,726

Title: Agricultural Pesticide Research.

Acct. No.: 33216-251710

National Goal: IX, RPA: 901

State Goal: 4

Termination: 11/15/81
SYs 0.6

Principal Investigator: C. Knight and J. McBeath

Objectives: This research is for field studies and laboratory analyses to evaluate various herbicides and fungicides on Alaskan agricultural crops. Major emphasis is placed on the control of snowmold on winter wheat with fungicides.

Funding Source:	Salary	Other	Total
State of Alaska, Office of the Governor	\$23,939	\$16,396	\$40,335

Title: Relationships Among Vegetation, Ground Ice, and Disturbances on Northfacing Slopes Near Fairbanks.

Acct. No.: 36504-230700

National Goal: IX, RPA: 901

State Goal: 4

Termination: 9/30/81
SYs 0.0

Principal Investigator: B. Neiland

Objectives: Depths to ground ice in various vegetation types on three N-facing slopes were measured three times during the growing season; this is being repeated in summer 1981. Depth of the moss or grass mulch mat was measured to compare with similar measurements made in 1971, 72 and 73.

Funding Source:	Salary	Other	Total
McIntire-Stennis	\$8,097	\$1,700	\$9,797

Title: Investigations on Revegetation and Correlated Physical and Biological Parameters on Denuded Lands in the Vicinity of Fairbanks, Alaska.

Acct. No.: 36503-230700

National Goal: IX, RPA: 901

State Goal: 4

Termination: 9/30/81
SYs 0.2

Principal Investigator: B. Neiland

Objectives: Experimental plots to detect the effects of natural revegetation of various mulch, fertilizer, and soil-addition treatments were re-sampled. These data and those from the five years of plot sampling of permanent plots in the various sites were reduced for analysis. Plots of seedlings, cuttings and seeds of alder and soapberry were established.

Funding Source:	Salary	Other	Total
McIntire-Stennis	\$6,844	\$1,438	\$8,282

Title: Outdoor Recreation and the Public Interest: Evaluation of Benefits and Costs in Federal and State Resources Planning.

Acct. No.: 33353-150040, 33362-230680 (W-133)
33353-230500

National Goal: IX, RPA: 902

State Goal: 4

Termination: 9/30/85
SYs 0.9

Principal Investigator: W. Workman and A. Jubenville

Objectives: The overall objective is to provide an evaluation of federal outdoor recreation benefit-cost methodologies – both conceptually and empirically. To accomplish this result there are two specific objectives. *Objective 1:* To apply empirically Water Resources Council (WRC) recreation valuation methods and procedures [currently: travel cost method (TCM); contingent valuation method (CVM); and unit day value (UDV)] to selected land and water projects. *Objective 2:* To compare and evaluate the alternative WRC recreation valuation methods and procedures for western resource situations. When warranted, appropriate improvements will be suggested for application in western settings.

Funding Source:	Salary	Other	Total
Hatch Regional	\$ 3,310	\$ 3,769	\$ 7,079
State	47,699	9,535	57,234
Hatch	280	59	339
Total	\$51,289	\$13,363	\$64,652

Title: Recreation Plan for the Susitna Hydroelectric Project.

Acct. No.: 33355-257470

National Goal: IX, RPA: 902

State Goal: 4

Termination: 12/31/80
SYs 0.0

Principal Investigator: A. Jubenville

Objectives: The objectives of the project are threefold: 1) assess resource capability for recreation opportunities; 2) determine public choice of recreational development schemes within the resource capability; and 3) develop a master plan incorporating the preferred choice of development schemes.

Funding Source:	Salary	Other	Total
Terrestrial Environmental Specialists	\$22,923	\$20,417	\$43,340

Title: Land-Use Analysis of the Susitna Hydroelectric Project.

Acct. No.: 33354-257470

National Goal: IX, RPA: 903

State Goal: 3

Termination: 12/31/80
SYs 0.1

Principal Investigator: A. Jubenville

Objectives: The intent of the project is first to describe present land use using the oral history technique to reconstruct present use and the historical forces that created those patterns. Second, the impact of the proposed hydroelectric project on the present land-use is to be evaluated.

Funding Source:	Salary	Other	Total
Terrestrial Environmental Specialist	\$17,973	\$24,628	\$42,601

Title: Mapping Vegetation for the Susitna Hydroelectric Project.

Acct. No.: 33236-257510

National Goal: IX, RPA: 903

State Goal: 3

Termination: 6/30/82
SYs 1.2

Principal Investigator: J. McKendrick

Objectives: This project is to provide vegetation base maps for the impact analyses of the proposed Susitna hydroelectric project, and identify ecological factors controlling secondary plant succession relative to moose habitats.

Funding Source:	Salary	Other	Total
Terrestrial Environmental Specialists	\$110,078	\$110,586	\$220,664

Title: Tree Species for Urban Planting in Interior Alaska.

Acct. No.: 33216-230760

National Goal: IX, RPA: 905

State Goal: 4

Termination: 5/1/82
SYs 0.0

Principal Investigator: B. Neiland

Objectives: This research is to analyze data from T-field outplanting areas on the Experiment Farm at Fairbanks, and take additional measurements as required; catalogue species that have been successfully used by residents in the Fairbanks area; and develop a list of species that grow north of 60° north latitude in Canada, Europe and Russia. Success of the T-field outplantings has been evaluated during summer 1981; search has been made in Fairbanks areas for species used as ornamentals and information gathered about those found.

Funding Source:	Salary	Other	Total
U.S. Forest Service	\$1,425	— 0 —	\$1,425

Title: Alyeska Willow Project, Phase I and II.

Acct. No.: I 33216-256260
II 33216-257970

National Goal: IX, RPA: 905

State Goal: 4

Termination: 4/30/81
SYs 0.0

Principal Investigator: B. Neiland and J. Zasada

Objectives: This research is to investigate techniques for establishment on a large scale of species of willow in arctic Alaska; determine effects on moose browse of removing cuttings, and characterize undisturbed-by-man moose browse stands; and to collect information on natural regeneration of willow in both disturbed and undisturbed sites.

Funding Source:	Salary	Other	Total
Alyeska Pipeline Service Company	\$59,440	\$61,408	\$120,848

Title: Ornamental Plant Improvement for Alaska.

Acct. No.: 33364-230690

National Goal: IX, RPA: 906

State Goal: 4

Termination: 9/30/81
SYs 0.2

Principal Investigator: D. Dinkel

Objectives: This research is to improve the quality of living in Alaska through the improvement and adaptation of plants for ornamental purpose in the north; to develop propagation techniques for indigenous and hardy exotic ornamental plants, so that a local nursery industry can develop; to develop background knowledge and information to support the bedding plant and cut flower industries; and to evaluate the potential for production of poinsettia for the local market.

Funding Source:	Salary	Other	Total
Hatch	\$24,137	\$7,528	\$31,665

ADMINISTRATIVE PROJECTS

**SUMMARY OF ADMINISTRATIVE PROJECT EXPENDITURES
BY SOURCE AND AMOUNT, FY 1981**

Funding Source	Salary	Other	Salary Plus Other	Percent of Total
State	\$280,523	\$143,019	\$423,542	61.0
Hatch	66,828	26,691	93,519	13.4
Hatch Regional	— 0 —	10,785	10,785	1.6
Grants & Contracts	104,282	17,118	121,400	17.5
Federal	39,450	5,650	45,100	6.5
TOTAL	\$491,083	\$203,263	\$694,346	100.0

Title: Director's Office.

Acct. No.: 33346-150040

Administrative Personnel: J. Drew, S. Restad, C. Hartman

Administrative Function: This account is for the overall administration of the Experiment Station.

Funding Source:	Salary	Other	Total
State	\$165,491	\$ 58,914	\$224,405

Title: Regional Research Coordination.

Acct. No.: 33359-230680 (NC-100)

Administrative Personnel: J. Drew

Administrative Function: This account is for the planning and coordination of regional agricultural research and for the accounting and disbursement of travel funds at each participating station for regional research.

Funding Source;	Salary	Other	Total
Hatch Regional	- 0 -	\$10,785	\$10,785

Title: Library Account.

Acct. No.: 33239-150040

Administrative Personnel: S. Restad

Administrative Function: This fund provides library materials at Experiment Station Research Centers. Because of the number of staff members located away from the University library, a number of books and journals of special interest are purchased and maintained at the Experiment Station facilities.

Funding Source:	Salary	Other	Total
State	\$ 5,096	\$15,998	\$21,094

Title: Palmer Administration.

Acct. No.: 33232-150040, 36215-230690

Administrative Personnel: S. Restad

Administrative Function: This account is for Administrative support for research at the Palmer Research Center.

Funding Source:	Salary	Other	Total
State	\$ 66,211	\$ 28,278	\$ 94,489
Hatch	66,828	26,691	93,519
Total	\$133,039	\$ 54,969	\$188,008

Title: CETA Title IV, Youth Employment and Training Program.

Acct. No.: 33236-248860

Termination: 9/30/81

Principal Investigator: S. Restad

Objectives: This program provides for two out-of-school YETP positions for training opportunities. Both are lab/helper aids. Training opportunities offered are instruction on operating lab analysis equipment, repair of small machinery, use of hand tools and painting techniques.

Funding Source:	Salary	Other	Total
CETA	\$4,946	\$ 358	\$5,304

Title: CETA Title II-D Public Service Equipment.

Acct. No.: 33236-252100

Termination: 9/30/81

Principal Investigator: S. Restad

Objectives: This program provides three positions with the University of Alaska; one barn person, one lab helper and one clerk typist. Barn person: learn to work independently, learn livestock care, learn to be accurate with research data and get along with co-workers. Lab helper: learn to independently perform scheduled duties, learn to be accurate in all details of laboratory and learn to use various types of lab equipment. Clerk typist: increase typing speed by 20 wpm, learn to work independently and learn to use other office machines.

Funding Source:	Salary	Other	Total
CETA	\$35,385	\$ 2,793	\$38,178

Title: Title V Senior Community Service Employment Program.

Acct. No.: 33236-251820

Termination: 6/30/81

Principal Investigator: S. Restad

Objectives: This program employs three Title V eligible senior citizens who assist in maintenance and laboratory duties of the Agricultural Experiment Station. They receive training in lab equipment and experimental methods which ultimately may lead to new careers in the unsubsidized job market.

Funding Source:	Salary	Other	Total
Department of Health & Social Services	\$33,434	\$ 2,581	\$36,015

Title: Publications Account.

Acct. No.: 33215-150040

Administrative Personnel: M. Murray

Administrative Function: This account contains funds for the production and distribution of such publications as *Agroborealis* and other Experiment Station publications. The cost of printing publications is charged whenever possible to the research projects on which they are based.

Funding Source:	Salary	Other	Total
State	\$43,725	\$39,829	\$83,554

Title: Federal Program Administration.

Acct. No.: WRU 3611-02010

Administrative Personnel: B. Leckwold

Administrative Function: This account provides administrative management, and business opportunities for the Federal employees within the AR/SEA/USDA group in Alaska. Includes preparation of the budget and accountability of all funds. Maintains records on operations cost, utilization and safety inspections of motor vehicles. Advises federal employees on personnel matters and keeps all employees informed on rules and regulations, and procedures which affect their status, both Federal and University regulations.

Funding Source:	Salary	Other	Total
Federal	\$39,450	\$ 5,650	\$45,100

Title: Personal Services Assignment Agreement.

Acct. No.: 33292-233220

Termination: 11/10/82
SYs 0.8

Principal Investigator: G. Laursen

Objectives: The Principal Investigator is working with the Biological Sciences Division, Office of Naval Research, Washington, D. C. as an Intergovernmental Personnel Act participant to develop a cold weather biophysical/physiology/biochemistry program.

Funding Source:	Salary	Other	Total
Department of the Navy	\$30,517	\$11,386	\$41,903

MAINTENANCE PROJECTS

**SUMMARY OF MAINTENANCE PROJECT EXPENDITURES
BY SOURCE AND AMOUNT, FY 1981**

Funding Source	Salary	Other	Salary Plus Other	Percentage of Total
State	\$393,897	\$439,247	\$833,144	100.0

Title: College Plant, Fairbanks.

Acct. No.: 33214-150040

Administrative Personnel: M. Stark

Administrative Function: This fund is for utilities and maintenance at the Fairbanks AES Experiment Farm. Most maintenance of facilities is done by farm staff, as well as improvements as time permits. The maintenance function includes a support facility capable of vehicle and machinery maintenance and repair. This repair capability is essential to the operation of the farm because of the extent and diversity of equipment which must be kept in operation.

Funding Source:	Salary	Other	Total
State	\$35,024	\$59,498	\$94,522

Title: College Research Services, Fairbanks.

Acct. No.: 33212-150040

Administrative Personnel: M. Stark

Administrative Function: This fund is for research support for research of the Fairbanks AES Experiment Farm. Significant effort is devoted to the production of feed for the AES animal program. A part of the farming for sustained feed supply is the ongoing program of clearing new ground, cleaning debris from clearing, fallowing areas and continuing to improve field drainage. Construction projects and fencing projects are also undertaken.

Funding Source:	Salary	Other	Total
State	\$ 46,587	\$102,786	\$149,373

Title: Palmer Plant.

Acct. No.: 33234-150040

Administrative Personnel: S. Restad

Administrative Function: This fund is for the administration of the Palmer Research Center physical plant. As an off-campus facility, administration and maintenance of the plant is handled separately from on-campus facilities.

Funding Source:	Salary	Other	Total
State	\$ 95,691	\$106,160	\$201,851

Title: Matanuska Plant.

Acct. No.: 33231-150040

Administrative Personnel: F. Perkins

Administrative Function: The Matanuska Farm is an off-campus facility of the Experiment Station which is maintained by the local staff.

Funding Source:	Salary	Other	Total
State	\$ 67,078	\$ 93,091	\$160,169

Title: Animal Husbandry Research Support, Matanuska Farm.

Acct. No.: 33240-150040

Administrative Personnel: F. Perkins

Administrative Function: This fund is for farm operations in support of maintenance of the dairy herd at Matanuska.

Funding Source:	Salary	Other	Total
State	\$43,674	\$25,408	\$69,082

Title: Homer Plant.

Acct. No.: 33254-150040

Administrative Personnel: A. Peischel

Administrative Function: This fund is for the administration of the Homer Research Center Physical Plant. As an off-campus facility, administration and maintenance of the plant is handled separately from on-campus facilities.

Funding Source:	Salary	Other	Total
State	\$105,843	\$ 52,304	\$158,147

PUBLIC SERVICE PROJECTS

SUMMARY OF PUBLIC SERVICE PROJECT EXPENDITURES
BY SOURCE AND AMOUNT, FY 1981

Funding Source	Salary	Other	Salary Plus Other	Percentage of Total
State	\$110,827	\$ 37,358	\$148,185	55.4
Grants & Contracts	54,593	64,869	119,462	44.6
TOTAL	\$165,420	\$102,227	\$267,647	110.0

Title: Point MacKenzie Work Sessions: Sessions for Other Agricultural Projects.

Acct. No.: 33236-252010

Termination: 6/30/81
SYs 0.0

Principal Investigator: J. Drew

Objectives: This account is used for the travel of Experiment Station staff members to obtain data and attend planning sessions for agricultural development projects in Alaska.

Funding Source:	Salary	Other	Total
State of Alaska, Office of the Governor	— 0 —	\$5,780	\$5,870

Title: Crop Improvement Association.

Acct. No.: 33217-150040

Principal Investigator: C. Knight

Objectives: This work is to increase and distribute public varieties and assist in seed certification for Alaska.

Funding Source:	Salary	Other	Total
State	\$ 9,941	\$ 2,001	\$11,942

Title: Matanuska Valley Breeders — Dairy Herd Improvement.

Acct. No.: 33244-150040

Principal Investigator: A. Brundage

Objectives: This work is to encourage artificial insemination for the dairy industry, and dairy herd improvement.

Funding Source:	Salary	Other	Total
State	\$26,453	\$ 8,540	\$34,993

Title: Soil and Plant Analysis — Laboratory Services.

Acct. No.: 33247-150040

Principal Investigator: G. Mitchell

Objectives: This work provides soil and tissue analysis for various research projects, and contract analysis and soil testing of farmers' samples for Cooperative Extension Service.

Funding Source:	Salary	Other	Total
State	\$57,949	\$23,362	\$81,311

Title: Engineering Problems.

Acct. No.: 33243-150040

Principal Investigator: L. Allen

Objectives: This work provides information on special, peculiar, or unique engineering problems and situations encountered in Alaska's agriculture.

Funding Source:	Salary	Other	Total
State	\$16,484	\$ 3,455	\$19,939

Title: International Committee on Forest Lands of Northern Latitudes.

Acct. No.: 33216-230470

Termination: 8/31/82

Principal Investigator: A. Gasbarro

Objectives: This program is to stimulate and facilitate international cooperation on applied forest management among land managers in circumpolar countries. Currently research on forest regeneration is being coordinated among several northern countries including Canada, Finland, Norway, Sweden, and the United States. Several international workshops are involved. A technical manual dealing with the regeneration of white spruce in Alaska and Yukon Territory will result from the three workshops. Publication is expected in late 1982.

Funding Source:	Salary	Other	Total
U.S. Forest Service	— 0 —	\$12,080	\$12,080

Title: Alaska Resources Management Training Center.

Acct. No.: 33216-257620

Termination: 1/31/81

Principal Investigator: R. Weeden and T. Gasbarro

Objectives: This project examined the need, possible organization, and general operating guidelines for a new unit of the University which would offer in-service training to resource management professionals. A week-long experimental training session was held in November, 1980, in Anchorage. A catalogue of existing in-service training courses was compiled and distributed. A comprehensive final project report was submitted in June, 1981.

Funding Source:	Salary	Other	Total
Hewlett Foundation	\$33,790	\$27,116	\$60,906

Title: Investigating Energy Alternatives for Northern Climates.

Acct. No.: 33216-240390

Termination: 11/30/80

Principal Investigator: W. Pfisterer

Objectives: This work is to develop a Northern Energy Resource Guide and accompanying teacher's manual through a series of community workshops and programs in the schools. Topics include agriculture; building construction; energy conservation in homes and for business and industry; wind, solar; wood; and hydropower.

Funding Source:	Salary	Other	Total
State of Alaska, Department of Health, Education & Welfare	\$ 6,722	\$ 3,392	\$10,114

Title: Northern Energy Catalog.

Acct. No.: 33216-243270

Termination: 6/5/81
SYs 0.2

Principal Investigator: W. Pfisterer

Objectives: This work is to develop a layman's guide to energy conservation, various solar technologies, and resource people specific to Alaska. The guide will be used by the Energy Extension Office of the Division of Energy and Power Development as part of their educational outreach program.

Funding Source:	Salary	Other	Total
Western Sun Utilization Network	\$11,408	\$12,372	\$23,780

Title: Second Alaska Alternative Energy Conference.

Acct. No.: 33216-257800

Termination: 12/1/80
SYs 0.0

Principal Investigator: P. Dyer Smith

Objectives: The Second Alternative Energy Conference was held in Fairbanks in October. Approximately five hundred (500) Alaskans participated in sessions conducted by experts in alternative energy from Alaska, other states, and Norway.

Funding Source:	Salary	Other	Total
Alaska Center for the Environment	- 0 -	\$3,245	\$3,245

Title: Appropriate Technology Small Grants Program.

Acct. No.: 33216-243280 (Federal)

Termination: 12/31/81
SYs 0.0

Principal Investigator: S. Yarian

Objectives: This project is to create a multi-media Energy Curriculum Library at the North Pole Junior-Senior High School. The Library consists of 3 sections: (1) the Curriculum Library containing approximately 100 books and filmstrips on general energy topics and related curriculum activities, (2) a 20 minute videotape of a local Appropriate Technology energy project, and (3) the development of "Energy packets" which combine the resources of the library with those of the community to form mailable energy education units for teachers in Alaska.

Funding Source:	Salary	Other	Total
State of Alaska, Department of Commerce & Economic Development, and U. S. Department of Energy	\$2,673	\$ 884	\$3,557